

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. – 43. (Cancelled)

44. (Currently Amended) A method to form a pixel bar chart, comprising:

obtaining a set of records, each record comprising a plurality of attributes;

assigning a pixel to each of said records ~~so that~~ to provide record-assigned pixels,

wherein every such record-assigned pixel in the chart is assigned to a different record; and

constructing the pixel bar chart by:

partitioning the record-assigned pixels into groups along a first axis of the pixel bar chart according to a first dividing attribute;

partitioning the record-assigned pixels in the groups into sub-groups along a second axis of the pixel bar chart according to a second dividing attribute;

by arranging after partitioning into the sub-groups, sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering attribute ~~so that~~ along the first axis of the pixel bar chart, and according to a second ordering attribute along the second axis of the pixel bar chart, wherein each record-assigned pixel is adjacent at least one other record-assigned pixel.

45. (Previously Presented) The method of claim 44 further comprising, for each

record-assigned pixel, assigning a selectable visual indicator to the record-assigned pixel based on an attribute value of each record so that some pixels have a different visual indicator than other pixels.

46. (Previously Presented) The method of claim 45 wherein the visual indicator comprises color.

1 47. (Currently Amended) The method of claim 44 wherein said records are obtained from a  
2 multidimensional data set ~~in which each record comprises a plurality of attributes~~, and said  
3 method further comprises assigning a selectable visual indicator to each record-assigned pixel  
4 based on an attribute of each record so that some pixels have a different visual indicator than  
5 other pixels.

1 48. (Currently Amended) The method of claim 44 wherein the pixel bar chart comprises a  
2 plurality of columns corresponding to the groups, each column comprising a plurality of pixels  
3 and having a width measured in terms of pixels, and the method further comprises causing the  
4 width of at least one column to be different than the width of at least one other column.

1 49. (Cancelled)

1 50. (Currently Amended) A computer-readable medium having computer-readable program  
2 code embodied therein that is adapted to cause a computer to implement a method to form a  
3 pixel bar chart ~~comprising a plurality of columns, each column having a plurality of pixels~~, the  
4 method comprising:

5 obtaining a set of records, each record comprising a plurality of attributes;  
6 assigning a pixel to each of said records ~~so that~~ to provide record-assigned pixels,  
7 wherein every such record-assigned pixel in the chart is assigned a different record; and  
8 constructing the pixel bar chart by:

9 partitioning the record-assigned pixels into groups along a first axis of the pixel  
10 bar chart according to a first dividing attribute;

11 partitioning the record-assigned pixels in the groups into sub-groups along a  
12 second axis of the pixel bar chart according to a second dividing attribute;

13 by arranging after partitioning the record-assigned pixels into the sub-groups,  
14 sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering  
15 attribute so that along the first axis, and sorting, within each sub-group, the record-assigned  
16 pixels according to a second ordering attribute along a second axis, wherein each record-assigned  
17 pixel is adjacent at least one other record-assigned pixel.

1 51. – 52. (Cancelled)

1 53. (Currently Amended) The computer-readable medium of claim 50 wherein said records  
2 are obtained from a multidimensional data set ~~in which each record comprises a plurality of~~  
3 ~~attributes~~, and said method further comprises assigning a selectable visual indicator to each  
4 record-assigned pixel based on an attribute of each record so that some pixels have a different  
5 visual indicator than other pixels.

1 54. (Currently Amended) The computer-readable medium of claim 50 wherein the pixel bar  
2 chart comprises a plurality of columns that correspond to the groups, each column comprising a  
3 plurality of pixels and having a width measured in terms of pixels, and the method further  
4 comprises causing the width of at least one column to be different than the width of at least one  
5 other column.

1 55. (Cancelled)

1 56. (Currently Amended) A computer system, comprising:  
2 a bus;  
3 a display device coupled to said bus;  
4 a computer-readable memory coupled to said bus; and  
5 a processor coupled to said bus, said processor executes a method for constructing a pixel  
6 bar chart on the display device, said method comprising:  
7 obtaining a set of records, each record comprising a plurality of attributes;  
8 assigning a pixel to each of said records ~~so that~~ to provide record-assigned pixels,  
9 wherein every such record-assigned pixel in the chart is assigned a different record; and  
10 constructing the pixel bar chart by:  
11 partitioning the record-assigned pixels into groups along a first axis of the  
12 pixel bar chart according to a first dividing attribute;  
13 partitioning the record-assigned pixels in the groups into sub-groups along  
14 a second axis of the pixel bar chart according to a second dividing attribute;  
15 arranging after partitioning the record-assigned pixels into the sub-groups,  
16 sorting, in each of the sub-groups, the record-assigned pixels according to a first ordering  
17 attribute so that along a first axis, and sorting, within each sub-group, the record-assigned pixels  
18 according to a second ordering attribute along a second axis, wherein each record-assigned pixel  
19 is adjacent at least one other record-assigned pixel.

1 57. – 58. (Cancelled)

1 59. (Currently Amended) The computer system of claim 56 wherein said records are  
2 obtained from a multidimensional data set ~~in which each record comprises a plurality of~~  
3 ~~attributes~~, and said method further comprises assigning a selectable visual indicator to each  
4 record-assigned pixel based on an attribute of each record so that some pixels have a different  
5 visual indicator than other pixels.

1 60. (Currently Amended) The computer system of claim 56 wherein the pixel bar chart  
2 comprises a plurality of columns corresponding to the groups, each column comprising a  
3 plurality of pixels and having a width measured in terms of pixels, and the method further  
4 comprises causing the width of at least one column to be different than the width of at least one  
5 other column.

1 61. – 62. (Cancelled)

1 63. (New) The method of claim 44, wherein sorting the record-assigned pixels in each sub-  
2 group according to the first and second ordering attributes comprises performing a  
3 two-dimensional sort of the record-assigned pixels in each sub-group.

1 64. (New) The method of claim 44, further comprising:  
2 determining a first one-dimensional histogram for the first ordering attribute, and a  
3 second one-dimensional histogram for the second ordering attribute,  
4 wherein sorting the record-assigned pixels in each sub-group is based on the first and  
5 second one-dimensional histograms.

1 65. (New) The method of claim 44, wherein the first and second ordering attributes are  
2 selected from the plurality of attributes, and the method further comprising:  
3 selecting a visual indicator attribute from the plurality of attributes, wherein the visual  
4 indicator attribute is different from both the first and second ordering attributes; and  
5 applying colors to the record-assigned pixels according to the visual indicator attribute  
6 such that at least some of the record-assigned pixels have different colors.

1 66. (New) The method of claim 44, wherein partitioning into sub-groups causes at least  
2 some of the sub-groups to have different widths measured in terms of pixels along the first axis,  
3 and causes at least some of the sub-groups to have different heights measured in terms of pixels  
4 along the second axis.

1 67. (New) The method of claim 44, wherein sorting the record-assigned pixels in each  
2 sub-group according to the first ordering attribute along the first axis comprises sorting the  
3 record-assigned pixels in each sub-group according to the first ordering attribute along an x-axis,  
4 and  
5 wherein sorting the record-assigned pixels in each sub-group according to the second  
6 ordering attribute along the second axis comprises sorting the record-assigned pixels in each  
7 sub-group according to the second ordering attribute along the y-axis.

1 68. (New) The method of claim 44, wherein constructing the pixel bar chart further  
2 comprises arranging the sub-groups in an array defined by the first and second axes.

1 69. (New) The method of claim 68, wherein partitioning into the sub-groups causes at least  
2 some of the sub-groups to have different widths measured in terms of pixels along the first axis,  
3 and causes at least some of the sub-groups to have different heights measured in terms of pixels  
4 along the second axis.

1 70. (New) The computer-readable medium of claim 50, wherein sorting the record-assigned  
2 pixels according to the first and second ordering attributes along the respective first and second  
3 axes comprises performing a two-dimensional sort of the record-assigned pixels according to the  
4 first and second ordering attributes.

1 71. (New) The computer-readable medium of claim 50, wherein sorting the record-assigned  
2 pixels in each sub-group according to the first ordering attribute along the first axis comprises  
3 sorting the record-assigned pixels in each sub-group according to the first ordering attribute  
4 along an x-axis, and  
5 wherein sorting the record-assigned pixels in each sub-group according to the second  
6 ordering attribute along the second axis comprises sorting the record-assigned pixels in each  
7 sub-group according to the second ordering attribute along the y-axis.

1 72. (New) The computer-readable medium of claim 50, wherein the first and second  
2 ordering attributes are selected from the plurality of attributes, and the method further comprises:  
3 selecting a visual indicator attribute from the plurality of attributes, wherein the visual  
4 indicator attribute is different from both the first and second ordering attributes; and  
5 applying colors to the record-assigned pixels according to the visual indicator attribute  
6 such that at least some of the record-assigned pixels have different colors.

1 73. (New) The computer-readable medium of claim 50, wherein partitioning into the  
2 sub-groups causes at least some of the sub-groups to have different widths measured in terms of  
3 pixels along the first axis, and causes at least some of the sub-groups to have different heights  
4 measured in terms of pixels along the second axis.

1 74. (New) The computer-readable medium of claim 50, wherein constructing the pixel bar  
2 chart further comprises arranging the sub-groups in an array defined by the first and second axes.

1 75. (New) The computer-readable medium of claim 74, wherein partitioning into the  
2 sub-groups causes at least some of the sub-groups to have different widths measured in terms of  
3 pixels along the first axis, and causes at least some of the sub-groups to have different heights  
4 measured in terms of pixels along the second axis.

1 76. (New) The computer system of claim 56, wherein at least some of the sub-groups have  
2 different widths measured in terms of pixels along the first axis, and at least some of the  
3 sub-groups have different heights measured in terms of pixels along the second axis.

1 77. (New) The computer system of claim 56, wherein sorting the record-assigned pixels  
2 according to the first and second ordering attributes causes a two-dimensional sort of the  
3 record-assigned pixels in each sub-group.

1 78. (New) The computer system of claim 56, wherein the first and second ordering attributes  
2 are selected from the plurality of attributes, and wherein the method executed by the processor  
3 further comprises:

4 selecting a visual indicator attribute from the plurality of attributes, wherein the visual  
5 indicator attribute is different from both the first and second ordering attributes; and

6 applying colors to the record-assigned pixels according to the visual indicator attribute  
7 such that at least some of the record-assigned pixels have different colors.

1 79. (New) The computer system of claim 56, wherein the sub-groups of the pixel bar chart  
2 are arranged in an array defined by the first and second axes.

1 80. (New) The computer system of claim 79, wherein at least some of the sub-groups have  
2 different widths measured in terms of pixels along the first axis, and at least some of the  
3 sub-groups to have different heights measured in terms of pixels along the second axis.

1 81. (New) A method to form a pixel bar chart, comprising:

2 receiving a set of records, each record comprising a plurality of attributes;

3 assigning the records to respective data points of the pixel bar chart; and

4 partitioning the data points into groups along a first axis of the pixel bar chart according  
5 to a first dividing attribute;

6 partitioning the data points in the groups into sub-groups along a second axis of the pixel  
7 bar chart according to a second dividing attribute, wherein the sub-groups are arranged in an  
8 array defined by the first and second axes;

9 after partitioning into the sub-groups, sorting, in each of the sub-groups, the data points  
10 according to a first ordering attribute along the first axis of the pixel bar chart, and according to a  
11 second ordering attribute along the second axis of the pixel bar chart.



- 1 82. (New) The method of claim 81, wherein partitioning into the sub-groups causes at least
- 2 some of the sub-groups to have different widths measured in terms of pixels along the first axis,
- 3 and causes at least some of the sub-groups to have different heights measured in terms of pixels
- 4 along the second axis.